Soil Temperature Sowing and Transplant Checklist

> **Companion Reference Sheet for:** Soil Temperature for Planting: When a Thermometer Beats the Calendar
> Save this PDF to your phone or print a copy for field reference. Planting dates vary by site and season. Check your local extension office for your area.

Key Takeaways

- **Measure at planting depth.** The surface can feel warm while the soil around seeds or roots is still cool.
- **Take readings on three consecutive mornings at the same time.** A steady rise is more useful than one unusually warm reading.
- **Use crop thresholds as starting points.** A minimum germination temperature means seeds may begin to germinate, not that they will emerge quickly or evenly. Local extension recommendations can differ.
- **Check each bed separately.** Shade, drainage, raised bed construction, mulch, and covers can all affect how quickly soil warms.
- **Consider more than soil warmth for transplants.** Check the forecast, soil moisture, and expected overnight conditions before planting outside.
- **Use hardiness zones for the right question.** A hardiness zone describes winter survival, not spring soil warmth.

Why soil temperature beats a calendar date alone

How to take a useful soil temperature reading

What to check	How to do it	What to record
Tool	Use a soil thermometer with a probe long enough to reach the planting zone.	Thermometer type and any reliability concerns.
Depth	For direct sowing, measure 2 inches deep. For transplants, measure 4 to 6 inches deep, adjusting for the root zone.	Planting method and measurement depth.
Timing	Take readings at the same time on three consecutive mornings	Date and time of each reading.
Location and conditions	Choose representative soil in each bed. Repeat in another spot if one reading seems unusual.	Bed location, soil moisture, shade, cover, and recent weather.
Probe reading	Wait for the temperature to stabilize before writing it down.	Temperature and whether the readings are rising, falling, or steady.

Minimum soil temperatures for common vegetables

Approximate minimum soil temperatures for common vegetables

Crop group	Starting soil temperature	Extension reference
Peas, spinach, and lettuce, cool season crops	Peas and lettuce: 40°F or higher; spinach: 40°F average minimum	North Dakota State University Extension for peas and lettuce, and Rutgers New Jersey Agricultural Experiment Station for spinach.

Crop group	Starting soil temperature	Extension reference
Sweet corn, warm season crop	About 50 to 55°F	Iowa State University Extension and Outreach and University of Nebraska Lincoln Extension discuss corn germination and planting temperatures.
Snap beans, warm season crop	60°F and above, average minimum for reliable germination	Rutgers New Jersey Agricultural Experiment Station.
Cucumber and squash, warm season crops	60°F and above, average minimum for reliable germination	Rutgers New Jersey Agricultural Experiment Station.
Peppers, warm season crop	60°F or more	Oregon State University Extension Service.
Tomatoes, warm season crop	65 to 70°F, ideal soil temperature	Oregon State University Extension Service.

Field Checklist for Planting Decisions

☐ **Name the crop.** Decide whether you are direct sowing or transplanting, since each calls for a different measurement depth.

☐ **Take a consistent series.** Use the same time of day on three consecutive mornings and wait for the probe to stabilize.

☐ **Record the conditions.** Note the temperature, depth, bed location, soil moisture, shade or cover, and recent weather.

☐ **Compare beds separately.** Repeat the process in beds with different sun, drainage, mulch, or construction.

☐ **Compare the trend with the crop threshold.** Consider the forecast and, for transplants, expected overnight conditions.

☐ **Keep a record for next season.** Your notes help you compare how different beds warm under similar spring weather.

For spring planting decisions, use our spring vegetable planting and frost window guide, which covers soil temperature and frost offsets with a comparison matrix and field checklist.

For more vegetable growing guidance, visit The Garden Den.

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